

**BEFORE AN INDEPENDENT HEARING PANEL  
OF THE WAIKATO REGIONAL COUNCIL**

**IN THE MATTER OF**

the Resource  
Management Act 1991  
(RMA)

**AND**

**IN THE MATTER OF**

of the Proposed Waikato  
Regional Plan Change 1:  
Waikato and Waipā River  
Catchments

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**STATEMENT OF EVIDENCE of JOSEPH SCOTT EDLIN ON BEHALF OF  
WAIKATO REGIONAL COUNCIL AS SUBMITTER**

**Technical - Block 3**

**DATED 5 July 2019**

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## **Role and Experience**

1. My name is Joseph Scott Edlin. I have been employed by Waikato Regional Council since 2016, most recently as a Senior Resource Officer within the Regulatory Workstream of the Healthy Rivers Implementation Team. My role is to develop the regulatory systems and processes required to support the successful implementation of Plan Change 1. Specifically, my responsibilities lie in developing the programmes of certification for Farm Nutrient Advisors and Farm Environment Planners, formulating compliance and monitoring strategies, and facilitating the development of NRP's and FEP's. I provide technical support to WRC staff in the areas of on farm nutrient management and planning. I also am frequently rostered on as a frontline ready response officer, responding to complaints and suspected breaches of the RMA.
2. I have co-authored the NRP development guidelines, FEP guide, and am an active member on the inter-regional council Overseer working group.
3. Prior to my involvement with WRC I worked for a farm consultancy firm as a sustainability advisor to agriculture. This role focused on developing resilient farming systems (nationally and internationally) that have low environmental footprint. This role required frequent use of Overseer and development of farm environment plans. I would estimate that I have developed or reviewed 300+ Overseer analyses. I also provided farm dairy effluent system design services to dairy farmers.
4. I continue to provide services as an independent sustainability advisor.
5. Currently I am the lead environmental analyst to the Dairy Business of the year competition. This involves annually assessing the environmental performance of numerous dairy farms across New Zealand against a range of environmental metrics including Overseer analyses.

## **Qualifications**

6. My qualifications include a Bachelor of Science (majoring in biology and environmental studies) and a Master of Science majoring in environmental studies. Both were completed at Victoria University of Wellington.

7. I have completed the advanced sustainable nutrient management course and effluent system design course at Massey University and am a Certified Nutrient Management Advisor under the Nutrient Management Advisor Certification Programme.
8. I confirm that I participated in the Commercial Vegetable Production caucusing for PPC1 as a representative of WRC.
9. I confirm that I am authorised to provide evidence on behalf of Waikato Regional Council in its Submitter role.
10. I confirm that I am familiar with the Code of Conduct for Expert Witnesses as set out in the Environment Court Practice Note 2014. I have read and agree to comply with the Code. Except where I state that I am relying upon the specified evidence or advice of another person, my evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

### **Scope of Evidence**

11. The purpose of this evidence is to provide clarification to the panel regarding Council as Submitter's view on several matters raised in the Officer's Block 3 s42A report. Council as Submitter broadly agrees with the conclusions and proposed amendments to PC1 outlined in the Officer's report. However, there are a several topics raised in the report where we believe further clarity might be of assistance. These topics include:
  - a. The adoption of good farming practice and the need to control intensification;
  - b. Nitrogen management in the Officer's Revised Schedule 1;
  - c. The use of minimum standards

### **Summary of Evidence**

12. Waikato Regional Council in its submitter role is broadly supportive of the amendments and recommendations outlined in the Officer's Block 3 s42A report and the Revised Schedule 1 approach set out in evidence by Mr Dragten.
13. If PC1 is to adopt good farming practice (GFP) as the principal driver of farm environment plan content, then the limitations of GFP should to be clear and accounted for.

14. When considering the limitations of GFP, particular regard should be given to the management of nitrogen. Broadly, GFP drives improved nitrogen use efficiency on farms. This may result in nitrogen loss reductions, but it is not a substitute for nitrogen limits such as the nitrogen reference point.
15. GFP is not a complete safeguard against nitrogen increase when land is subject to intensification. A farm operating at GFP can intensify its land use, still operate at GFP, and increase nitrogen loss. Accordingly, the adoption of GFP should be partnered with adequate controls on intensification.
16. The Officer's Revised Schedule 1 assessment raises the issue of enforcing Overseer derived nitrogen limits. It also alludes to Overseer inputs used as the point of compliance as being more certain and enforceable.
17. I agree that using Overseer inputs as the point of compliance is more enforceable. This is supported by Mr Lynch's evidence. If the panel are of the mind to continue with nitrogen limits and that those limits should be enforceable from the outset, then this may be an appropriate means of doing so.
18. The GFP approach affords significant flexibility to land owners and certified farm environment planners (CFEP) regarding the type and extent of mitigations required. GFP is subjective in nature and requires farm planners to be objective in their assessment of the mitigations required on farm.
19. Whilst the flexibility of GFP is a strength of the approach, it is also frequently unclear as to "how much is enough". Mitigation type and extent is left to be determined by the CFEP. In order to alleviate some of the concern this may raise, Council as Submitter is supportive of the use of minimum standards for key high-risk activities.
20. We believe these minimum standards can provide greater confidence that some of the key high-risk activities we know to be occurring on farms are being adequately managed. They also help to provide clarity to farm planners as to where GFP "starts".

### **Good Farming Practice and Intensification**

21. The Officer's proposed revisions to Schedule 1 to incorporate GFP into farm environment plans states that:

*“Adherence to good farming practice will not prevent increases in contaminant losses associated with intensification of land use, resulting either from changes from one land use to another or from increases in intensity within a given land use. GFP should not therefore be seen as an alternative to land use change controls set out in 3.11.5.7 or the nitrogen loss restrictions of schedule B.”<sup>1</sup>*

22. I agree with this statement. It provides an important caveat regarding the use of GFP within Farm Environment Plans (FEP). Without controls on intensification and nitrogen (N) loss it is difficult to establish confidence that N loss will be maintained or reduced on individual farms even if operating at GFP.
23. GFP is focussed primarily on managing contaminant loss risk via the adoption of practices which reduce the risk of those contaminants entering ground or surface water.
24. GFP’s related to managing N losses tend to focus on increasing the efficiency of users of nitrogen. For example, an irrigated dairy farm may install soil moisture monitoring technology to ensure water is applied more efficiently. It is likely that this will decrease N leaching and increase the amount of N utilised within the farm system (Aqualinc 2018).
25. What GFP does not do is require a farm to operate at or below a certain N loss limit. Consequently, GFP does not necessarily prevent increases in N loss associated with intensification of land use.
26. For example, if a dairy farm operating at GFP were to increase the area of land used for in-situ winter grazing of crops from grazed pasture the overall N loss on farm is likely to increase. This is because the area used for winter grazing will generally lose more N than grazed pasture (Smith & Monaghan, 2013). Accordingly, relying solely on GFP to manage N at a property level does not provide certainty that N limits are being adhered to.
27. Furthermore, the effectiveness of N related GFP’s will depend on the extent of their application and is situational.
28. For example, the GFP promoted by the Fertiliser Association of New Zealand regarding the timing of nitrogen fertiliser includes the following:

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<sup>1</sup> Pg. 65 of the Block 3 s42A report

- a. *Nitrogen application is matched to times of plant growth*
- b. *Nitrogen is not applied when the 10cm soil temperature at 9am is less than 6°C and falling.*

(FANZ, 2014)

29. The above GFP is clearly situational, difficult to measure in a regulatory context, and requires a significant amount of judgement to be used by farm planners. The outcome of these judgement calls will determine how effective or ineffective the GFP mitigation is.
30. It should also be noted that intensification will generally increase the risk of sediment, phosphorus, and bacteria being lost to water. However, these losses tend to be more mechanical (overland flow) in nature compared to N and more easily addressed via GFP mitigations (HBRC, 2017).
31. Where there is an expectation that individual farms will reduce N loss to achieve water quality outcomes, GFP should be used in conjunction with constraints on nitrogen loss and intensification. The NRP provisions and requirements of rule 3.11.5.7 in PPC1 achieve this. If GFP is adopted as the driver of FEPs in PC1 then the N loss limits and land use change provisions should be retained in some form.

### **Nitrogen Management in the Officer's Revised Schedule 1**

35. The Officer's proposed revisions to Schedule 1 to incorporate GFP into FEPs makes the following observations regarding the use of Overseer (I have paraphrased for brevity)<sup>2</sup>:
  - a. There are three regulatory approaches to manage N loss – manage using measured losses, modelled losses, or the inputs that influence losses.
  - b. Overseer's usefulness is dependent on how it is used, and the certainty required in decision making. Overseer can be used to draw conclusions "on the balance of probabilities" but not "beyond reasonable doubt". Therefore, Overseer can be used to conclude a farm is likely or

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<sup>2</sup> Pg.65 of the Block 3 s42A report

not likely complying with a N loss limit. Overseer is not sufficiently robust to allow Council to allege a farm has committed an offence or take enforcement action in response.

- c. Input controls (limits on cow numbers, fertiliser, feed, etc) are more certain and enforceable. It is easier to draw beyond reasonable doubt conclusions as to whether input limits have been exceeded.

36. I agree with these statements and they are consistent with the evidence of Mr Lynch.

37. These statements raise two important questions.

- a. To what extent should nitrogen limits be enforceable in PC1?

- b. If Overseer outputs cannot be enforced by Council, then what should be used in their place?

38. With regards to question a, there have been numerous views expressed by submitters on this topic. It is acknowledged that enforceability can at times come at the cost of practicality. I anticipate clarity in answer to this question can be formed through the hearings process.

39. If PC1 is to adopt a more principle based approach to managing nitrogen loss limits (NRP or otherwise) then I am supportive of the approach to nitrogen management outlined in the Officer's revised Schedule 1.

40. This approach proposes to assess compliance with an NRP via the FEP audit process. If audits identify that "on the balance" a farm is not likely to be compliant with an NRP then Council may impose more restrictive input controls as conditions of consent via a s128 review.

41. Such an approach potentially opens the door to use other subjective assessment methods in the audit process. An example might be the Fonterra Nitrogen Risk Scorecard proposed by Mr R Allen<sup>3</sup> which is an analysis of N loss risk rather than measuring compliance with an N loss limit.

42. If the panel are of a mind to ensure N loss limits can be enforced by Council without the need for a consent review, then I support the view of Mr Lynch that using farm system inputs as the point of compliance could be appropriate.

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<sup>3</sup> Page 5. Block 2 statement of evidence of Richard Allen.



43. The Block 2 evidence of Mr Palmer<sup>4</sup> illustrated how stock units/hectare can be used as a reasonable proxy for N loss on extensive drystock farms.
44. In the case of more intensive farm systems, this relationship would likely be more complex. Nitrogen loss is more heavily influenced by other inputs such a fertiliser use, supplementary feed, and effluent management in these systems.
45. I am of the view that the key non-biophysical input drivers of N loss on more intensive farms can be identified with relative ease. Overseer Ltd have already provided guidance regarding the inputs to Overseer that have the greatest influence on nutrient loss (OVERSEER, 2015).
46. If these key inputs were to be maintained or reduced, then Council could have confidence that a certain level of N loss is not being exceeded.
47. These key inputs could then form the point of compliance and enable Council to respond to any non-compliance with more certainty.
48. I have read the Block 2 evidence of Mr Shepherd and Mr Sheath on behalf of Miraka regarding the use of N surplus as a proxy for N loss as modelled by Overseer. Based on my own experience, I broadly agree with their conclusions that when biophysical inputs are standardised, N surplus is a good proxy for N loss.
49. One may conclude from this that N surplus adequately accounts for farm inputs. However, I note that Mr Sheath suggests Overseer could be used to estimate N surplus<sup>5</sup>. I am concerned that much like N loss, N surplus as an Overseer output has many of the enforceability issues identified by Mr Lynch. The approach also puts to one side the “actual” N loss contributions of each individual farm.

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<sup>4</sup> Page 12. Paragraph 44. Block 2 statement of evidence of Jon Palmer.

<sup>5</sup> Page 3. Paragraph 1.8. Block 2 statement of evidence of Gavin Sheath.

## Minimum Standards

49. The Block 3 s42A report recognises that minimum standards can be used in conjunction with GFP and notes that the location of any minimum standards would likely be within the rule framework rather than Schedule 1 content<sup>6</sup>.
50. The verbal evidence of Mr Ian Mayhew in response to rebuttal<sup>7</sup> provided in Block 2, recommended the re-inclusion of ‘minimum standards’ into Policy 2 and the subsequent inclusion of minimum standards into Rule 3.11.5.2A – either as a matter of control or as conditions. Mr Mayhew advised the Panel that a decision on where to include it could be made as part of Block 3 considerations once the content of Schedule 1 is confirmed.
51. So far as this evidence is concerned, the “where” has been flagged by Mr Mayhew, but the “what” and “why” form the basis of the following analyses.
52. In promoting a more GFP-focussed approach to FEPs, I believe it is appropriate to consider the use of “minimum standards”.
53. In my opinion, a minimum standard sets a minimally acceptable baseline of acceptable operational practice that GFP will be no lesser than, and exceed where appropriate.
54. An example of a minimum standard may be the requirement to implement a 5m setback from any waterway when cultivating adjacent land. GFP may require that a greater setback is needed (due to slope, erodibility, and so on) however it could be no less than 5m.
55. These baseline practices would apply from the beginning of authorisation, leaving the tailored decision on what additional practices constitute GFP and the appropriate transition speed at the general discretion of the CFEP and their expertise. The practices I would expect to form the basis for any minimum standards are those practices I consider from my experience to be of sufficiently high risk of contaminant loss and that are relatively common occurrences.

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<sup>6</sup> S42A – Block 3 Paragraphs 187 and 215

<sup>7</sup> Rebuttal Evidence of Janeen Kidd Smith – para 15

56. I accept that a tailored approach to mitigations on farm is central to producing good FEPs, and there may be instances where the restrictions imposed by minimum standards are in excess of GFP.
57. Therefore, maintaining flexibility through an alternative consent process for those farms where risks can be sufficiently mitigated may be beneficial. But I consider such situations to be uncommon and worthy of additional scrutiny provided for by a more restrictive process.
58. As notified, PC1 contains few “minimum standards” – stock exclusion and cultivation restrictions are examples.
59. This suggests that identifying such minimum standards is not straightforward. Nonetheless, I consider the use of minimum standards as a potential means of complementing the more principled and flexible approach of GFP.
60. In my experience, clear minimum standards have the advantage of providing increased levels of clarity to CFEP and farmers, whilst providing confidence to the Council that specific high-risk activities are being managed appropriately.
61. The controls used in the existing standards within PC1 as notified are in my opinion generally appropriate for use as minimum standards. Where no controls currently exist, I anticipate similar restrictions on set-backs and timing could be used.
62. In my experience, the following high-risk practices merit consideration for minimum standards:
  - a. cultivation of land;
  - b. grazing winter forage crops in-situ;
  - c. the use of sacrifice paddocks;
  - d. fertiliser application during winter months.
63. Appendix 1-3 of this evidence provides recent images of these identified practices (with the exception of d) captured by WRC field and Incident Response staff in the Healthy Rivers catchment. They highlight why these types of practices are sufficiently high-risk and therefore likely candidates for minimum standards.

64. Minimum standards for high risk practices a-c would likely focus on set back distances. Numerous experts have submitted regarding setback distance. I acknowledge that the exact wording of setback minimums would likely require further discussion.
65. I do however consider that the hearings presentation provided by Kathryn McArthur<sup>8</sup> for the Director General of Conservation in Block 2 provides good guidance here. Based on this evidence, a minimum setback of 5-10m seems appropriate.
66. Minimum standards related to horticulture may require further thought to reflect the unique nature of their practices.
67. With respect to high risk practice d, I would envisage any minimum standards to prevent the application of N based fertiliser between June and July. This period is high risk for N leaching due to low plant growth and frequent drainage.
68. I caution that consideration needs to be given to the potential impact of a more restrictive standards-based approach on farm systems, particularly for dry-stock farms. However, I consider that in the case of these few activities, the potential cost to the environment outweighs the likely impact to a farm system.
69. Further to the above. I note that the Officer's proposed revisions to Schedule 1 states:
- "The absence of any specified outcomes or objectives for the FEP may lead to pressure for CFEP's to approve the "minimum actions possible" simply to satisfy the requirements of the process"*<sup>9</sup>
70. I agree with this statement and it reflects some of the concerns WRC implementation staff have with Schedule 1 as notified.
71. However, whilst the Officer's Revised Schedule 1 seeks to amend this risk, I believe it remains relevant.

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<sup>8</sup> Table provided by Kathryn McArthur during Block 2 hearings. <http://www.waikatoregion.govt.nz/assets/Day-31-Item-5.pdf>

<sup>9</sup> Pg. 55. Section 2.1 of the proposed revisions to Schedule 1 in the Block 3 s42A report.

72. Because GFP's are situational, non-specific, and tailored to each farm there will be instances where it is unclear as to "how much is enough". In my opinion there is a risk that CFEP's will be pressured into accepting minimum GFP actions.
73. The implementation team's experience developing the farm environment plan template and model FEP's with rural professionals has in some instances confirmed this risk.
74. I stress that many of the rural professionals that we have engaged with throughout this process are capable farm environment planners. Nonetheless, in some instances there was observed to be a reluctance (or even resistance) to commit farmers to actions that we would have considered "minimums" for the farm in question.
75. On these occasions, there was no malice exhibited towards the environment by these farm planners. Rather, it was observed that the tension between the farmer's desired outcome and environmental outcomes was difficult to reconcile for these practitioners. Having previously worked in this space, I sympathise with the angst this position can cause.
76. The discretion a CFEP has in tailoring mitigation actions to a farm system is clearly a strength of the GFP approach. However, unfettered discretion regarding "how much is enough" requires an unprejudiced judgement of the farm's mitigation requirements. I am concerned that not all CFEP's will operate with such an objective lens and GFP arguably provides them with the scope to do so.
77. It is hoped that the auditing of these individuals will go some way to moderating this effect. Undoubtedly all CFEP's will require ongoing training and upskilling in order to achieve common FEP outcomes. This will take significant time and investment by both Council and CFEP's.
78. For these reasons, I am of the opinion that clear minimum standards should be defined within PC1 for key high-risk activities. In doing so, greater confidence can be had from the outset that egregious farm practice is being appropriately managed in FEP's. CFEP's will also be afforded clarity as to where GFP "starts" for these practices.

## References

FANZ, (2014). Code of Practice for Nutrient Management: Fertiliser Association of New Zealand

Aqualinc, (2018). Reducing Nutrient Losses through Improving Irrigation Efficiency. Aqualinc – Prepared for the Fertiliser Association of New Zealand.

Smith, C; Monaghan, R. 2013. Comparing OVERSEER estimates of N leaching from grazed winter forage crops with results from Southland trial sites.

OVERSEER. 2015. Technical Description of OVERSEER for Regional Councils. Prepared for Bay of Plenty Regional Council.

HBRC. 2017. Good Environmental Practice for Winter Crops. Prepared for Hawkes Bay Regional Council.

## APPENDIX 1 – Commercial Vegetable Production



**Figure 1. Sediment laden overland flow discharging to a waterway from a market gardening operation.**



**Figure 2. Discharge of sediment laden overland flow into a waterway from a property used for commercial vegetable production.**





**Figure 3. Area of sediment detention and discharge to waterway on a commercial vegetable production property.**

## APPENDIX 2 – Dry stock



**Figure 4.** Cultivated, fodder crop area. Sediment run-off can be seen moving towards nearby waterways.



**Figure 5.** Sloped sacrifice paddock area with severe pugging and soil disturbance.



**Figure 6. Area of winter forage crop heli-sprayed in a steep gully. High risk for sediment, bacteria, and phosphorus run-off.**

**APPENDIX 3 - Dairy**



**Figure 7. Area of fallow ground after a rainfall event. No sediment loss mitigations in place. Sediment discharging to waterway.**



**Figure 8.** Grazed fodder crop area on a flood plain. Significant ponding and overland flow occurring near a waterway.



**Figure 9. Grazed fodder crop area viewed during aerial inspection. Waterway running through the fallow area.**